Reprinted from *Crop Science*
Vol. 37, No. 3

Registration of Six Germplasm Lines of Upland Cotton: PD 93009, PD 93019, PD 93021, PD 93030, PD 93034, and PD 93057

PD 93009, PD 93019, PD 93021, PD 93030, PD 93034 (Reg. no. GP-650 to GP-654, PI 591419 to PI 591423), and PD 93057 (Reg. no. GP-655, PI 591426) cotton (*Gossypium hirsutum* L.) germplasm lines that combine high yield potential and excellent fiber quality were developed at the Pee Dee Research and Education Center, Florence, SC. These lines were released in 1995 by the USDA-ARS and South Carolina Agricultural Experiment Station.

Each of the lines resulted from different, randomly selected F_2 plants from a inheritance study of fiber properties in Pee Dee cotton populations (7). Selection for lint yield, fiber and yarn properties was practiced in $F_{2:4}$ progeny rows and in replicated trials from the F_5 to F_7 generations. PD 93009 has parentage PD 5286/PD 5485. PD 5286 (3) was developed from the cross 'DES 422'/PD 6044, and PD 5485 is from the cross 'McNair 235'/FJA 347. PD 93019 has the parentage PD 5285/PD 5377, where PD 5285 is a full-sib to PD 5286 and PD 5377 (4) has the parentage 'Delcot 311'/PD 6171. PD 93021 was derived from the cross PD 5286/PD 5377. PD 93030 was developed from the cross PD 5358/PD 5485. PD 5358 (4) has the parentage 'Delcot 311'/PD 5657. PD 93034 was derived from the cross PD 5285/PD 5485, and PD 93057 was developed from the cross PD 5265/PD 5485. PD 5265 has the parentage 'McNair 220'/'Sealand 542'. Pedigrees of grandparents have been published (1).

These lines were evaluated for lint yield, fiber, and spinning properties for 3 yr in conventional (CN) full-season and late-planted (LP) production systems (6). Average planting date for CN trials was 8 May, and the season length was 170 d from planting to harvest. For LP trials, the average planting date was 10 June, with a season length of 152 d from planting to first temperature below 0°C. In all trials, the high-yielding, high-fiber quality cultivar PD-3 (2) was used as a check.

In CN trials, PD 93030, PD 93034, and PD 93057 averaged 2, 9, and 10% higher lint yield, respectively, than PD-3 (5). Only minor differences in the fiber properties 2.5% span length, fiber strength (by stelometer measurement), and micronaire reading exist between these germplasm lines and PD-3. However, PD 93030 and PD 93034 averaged 4% higher yarn strength, and PD 93057 averaged 3% higher yarn strength. PD 93009, PD 93019, and PD 93021 were released for their yield advantage and equivalent fiber quality compared with PD-3. PD 93009 outyielded PD-3 in all CN and 2 of 3 LP trials, for an average yield advantage of 12%. Lint yields of PD 93019 and PD 93021 exceeded PD-3 in all trials, for an average advantage of 8 and 5%, respectively. The 2.5% span length, fiber strength, and micronaire reading of each line was similar to PD-3. The yarn strength of PD 93009 and PD 93019 was similar to PD-3, while that of PD 93021 averaged 3% higher.

These germplasm lines should contribute to efforts at concurrent improvement of both lint yield and fiber quality.

Seed (25 g) of these germplasm lines may be obtained from the corresponding author. Recipients of seed are asked to appropriately acknowledge the source of the germplasm if it is used in the development of new germplasm, cultivars, or hybrids.

O. L. MAY* AND D. S. HOWLE (8)

References and Notes

1. Calhoun, D.S., D.T. Bowman, and O.L. May. 1994. Pedigrees of upland and pima cotton cultivars released between 1970 and 1990. Miss. Agric. & For. Exp. Stn. Bull. 1017.
2. Culp, T.W., R.F. Moore, L.H. Harvey, and J.B. Pitner. 1988. Registration of 'PD-3' cotton. Crop Sci. 28:190.
3. Green, C.C., T.W. Culp, and B.U. Kittrell. 1991. Registration of four germplasm lines of upland cotton with early maturity and high fiber quality. Crop Sci. 31:854.
4. Green, C.C., T.W. Culp, and B.U. Kittrell. 1991. Registration of five germplasm lines of upland cotton with high yield potential and fiber quality. Crop Sci. 31:854–855.
5. May, O.L. 1996. Ten Pee Dee germplasm lines of upland cotton with high yield potential, variable maturity, and excellent fiber and spinning properties. p. 599–601. *In* P. Dugger and D. Richter (ed.) Proc. Beltwide Cotton Prod. Conf., Nashville, TN. 9–12 Jan. 1996. Natl. Cotton Council, Memphis, TN.
6. May, O.L., and B.C. Bridges, Jr. 1995. Breeding cottons for conventional and late-planted production systems. Crop Sci. 35:132–136.
7. May, O.L., and C.C. Green. 1994. Genetic variation for fiber properties in elite Pee Dee cotton populations. Crop Sci. 34:684–690.
8. O.L. May, USDA-ARS and Dep. of Agronomy, Clemson Univ., 2200 Pocket Rd., Florence, SC 29506-9706; and D.S. Howle, Dep. of Seed Certification, Clemson Univ., 1162 Cherry Rd., Clemson, SC 29634-0359.
Joint contribution of the USDA-ARS and the South Carolina Agric. Exp. Stn. Tech. Paper no. 4131. Registration by CSSA. Accepted 31 Aug. 1996. *Corresponding author (cotton@florence.ars.usda.gov).

We thank C.C. Green for making the crosses, S.H. Baker and T.A. Peacock for testing Pee Dee strains, and O.F. Heath for technical assistance.

Published in Crop Sci. 37:1030–1031 (1997).